

# Multi-Hazard Mitigation Plan

## 1.0 Introduction

As part of the overall community planning effort for hazard mitigation, the Metropolitan Government of Nashville and Davidson County, Tennessee, (Metro) has prepared a Multi-Hazard Mitigation Plan pursuant to the requirements of the Disaster Mitigation Act of 2000 (Public Law 106-390).

Hazard Mitigation is defined as any sustained action taken to reduce or eliminate long-term risk to human life and property from hazards. Hazard Mitigation Planning is the process through which the natural hazards that threaten communities are identified, the likely impacts of those hazards are determined, mitigation goals are set, and appropriate strategies that would lessen the impacts are identified, prioritized, and implemented.

Hazard Mitigation Planning is a requirement for state and local governments in order to maintain eligibility for certain federal disaster assistance and hazard mitigation funding programs. Communities that are at risk from natural disasters cannot afford to jeopardize this funding. Metro is both a community at risk and a community that has benefited from federal mitigation funding programs.

### PURPOSE AND NEED

Each year, natural disasters in the United States take the lives of hundreds of people and injure thousands more. Nationwide, taxpayers pay billions of dollars annually to help communities, organizations, businesses and individuals recover from disasters. These monies only partially reflect the true cost of disasters, because additional expenses upon insurance companies and non-government organizations are not reimbursed by tax dollars.

Additionally, many natural disasters are predictable. Many more are repetitive, often with the same results. Many of the damages caused by these events can be alleviated or even eliminated through hazard mitigation activities.

FEMA, the Federal Emergency Management Agency, now a part of the Department of Homeland Security, has made reducing losses from natural disasters one of its primary goals. Hazard Mitigation Planning and the subsequent implementation of the projects, measures, and policies developed through those plans, is the primary mechanism in achieving this goal. Success in reducing disaster damages has been the result of mitigation projects that were implemented as a result of hazard mitigation planning.

This plan was developed pursuant to the Disaster Mitigation Act of 2000 (DMA) and the regulations published in the *Federal Register* Volume 67, Number 38, Tuesday, February 26, 2002. Section 104 of DMA revises the Robert T. Stafford Disaster Relief and Emergency Assistance Act by adding Section 322, which provides new and revitalized emphasis on



hazard mitigation, including adding a new requirement for local mitigation plans. These new local mitigation planning regulations are implemented through 44 CFR Part 201.6.

Proactive hazard mitigation planning at the local level can help reduce the cost of disaster response and recovery to property owners and government by protecting critical community facilities, reducing liability exposure, and minimizing overall community impacts and disruption.

## SCOPE

This Multi-Hazard Mitigation Plan identifies goals and measures for hazard mitigation and risk reduction in order to make communities less vulnerable and more disaster resistant and sustainable. Information in this plan should be used to help guide and coordinate mitigation activities and local policy decisions for future land use decisions. This Plan covers the jurisdiction of the Metropolitan Government of Nashville and Davidson County.

This Plan follows DMA planning requirements and associated guidance for developing Local Hazard Mitigation Plans. This guidance sets forth a generalized 4-task process:

- 1) Organize Resources;
- 2) Assess Hazards and Risks;
- 3) Develop a Mitigation Plan; and
- 4) Evaluate the Plan Effectiveness.

This Plan also uses the process set forth in FEMA Region IV's Crosswalk Reference Document for Review and Submission of Local Mitigation Plans.

This plan addresses natural hazards only. Although Metro recognizes that FEMA is both encouraging and promoting communities to integrate human-caused hazards into the mitigation planning process, the scope of this effort does not address human-caused hazards for two reasons. First, DMA requires extensive public information and input, and this is in direct conflict with the security necessary in planning for Chemical, Biological, and Radiological hazards. The Planning Committee determined it was not in the Community's best interest to share specific information about the area's vulnerability to human-caused hazards. Second, organizationally, many of the planning activities for human-caused hazards are either underway or complete, and have been developed by a different set of organizations. The Mayor's Office of Emergency Management (OEM) may provide further information on a need-to-know basis.

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# Multi-Hazard Mitigation Plan

## 2.0 Community Profile

### GEOGRAPHY – LOCATION AND AREA

Metropolitan Nashville-Davidson County is located in middle Tennessee along the banks of the Cumberland River. The community encompasses 533 square miles. Three major interstate highways I-40, I-65, and I-24 converge in Nashville. Positioned within 600 miles and less than one day's drive from 50 percent of the U.S. population and less than 6 hours drive to 13 other states, Nashville enjoys a prime geographic location (See Figure 2-1).

The City of Nashville was settled in 1779 and became the state capital in 1843. The City of Nashville and Davidson County governments were consolidated into one entity, Metropolitan Nashville-Davidson County, in April 1963.

### CLIMATE

Nashville has a mild climate that is common throughout the southeastern part of the United States with four distinct seasons and light snowfall in the winter. Annual average temperatures range from 36 to 79 degrees Fahrenheit with an average summer temperature of 89 degrees and an average winter temperature of 46 degrees. The average annual precipitation is 48.5 inches and the average humidity is 58 percent. Table 2-1 presents normal climate statistics for the community.

**Table 2-1. Normal Climate Statistics for Nashville-Davidson County, Tennessee**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Days with Precipitation</b>	11	10	12	11	11	10	10	8	8	7	10	11
<b>Wind Speed (mph)</b>	8.9	9.1	9.7	9.0	7.4	6.9	6.5	6.0	6.3	6.7	8.3	8.8
<b>Humidity (%)</b>	71	68	64	63	70	71	72	72	73	70	70	72
<b>Sunshine (%)</b>	41	47	52	59	60	65	63	63	62	62	50	42
<b>Days Clear of Clouds</b>	6	7	8	8	8	8	8	10	11	13	9	7
<b>Partly Cloudy Days</b>	6	6	7	9	10	13	13	12	9	8	7	7
<b>Cloudy Days</b>	19	16	16	13	13	10	10	9	10	10	14	17
<b>Snowfall (in)</b>	3.9	3.4	1.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5

(Source: National Weather Service)



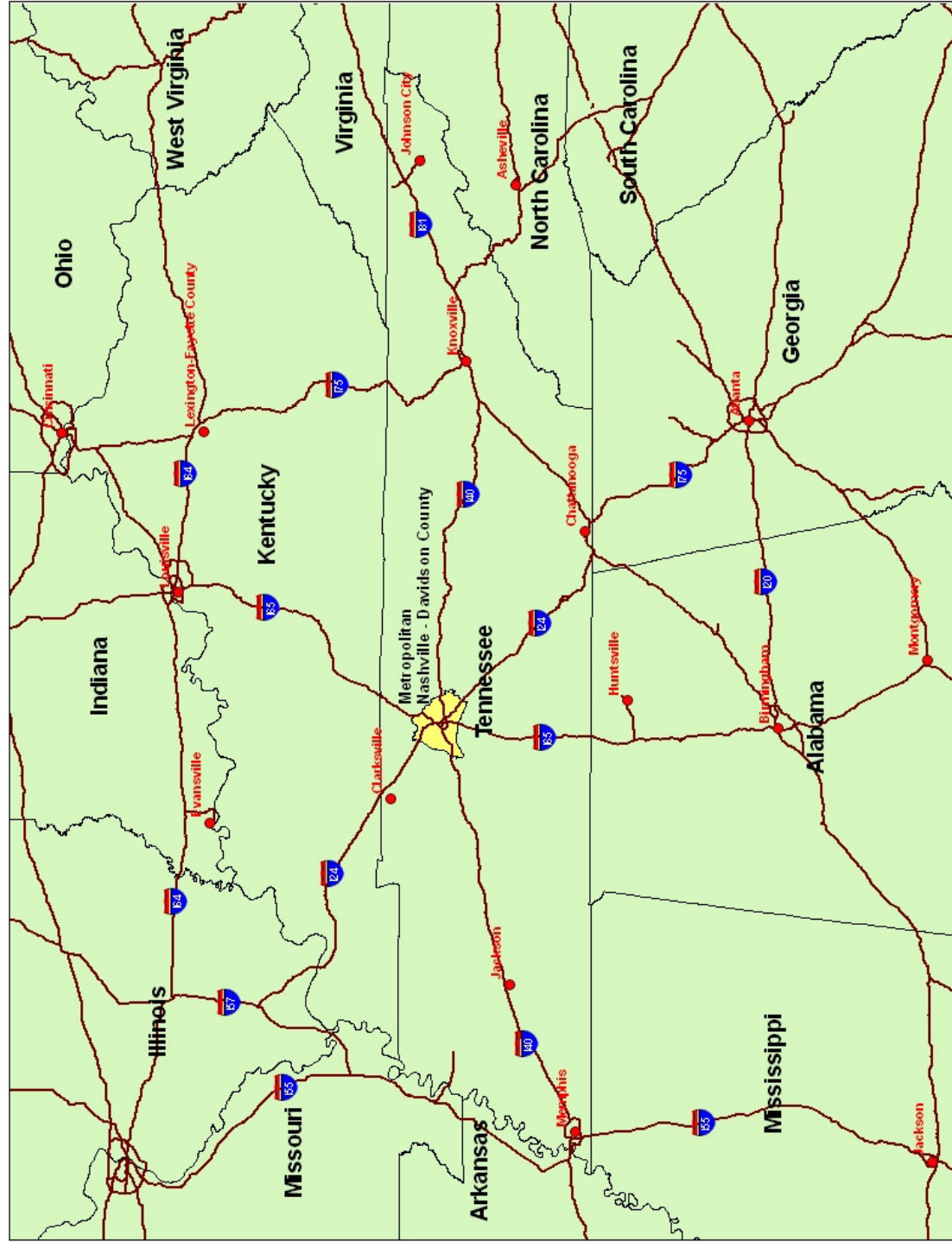


Figure 2-1. Metropolitan Nashville-Davidson County Location Map



## PHYSICAL FEATURES AND LAND USE

Nashville-Davidson County is situated in a natural basin surrounded by wooded hills with the Cumberland River and numerous tributaries flowing through the area. Topography varies from flatter lands in the south to elevated areas in the north that range from 550 feet to 1,100 feet above sea level at the highest point. In addition to the Cumberland River, major topographical features include Percy Priest Lake and Old Hickory Lake. The community features lush vegetation and over 6,600 acres of parks, making it the leader in per capita parks for the entire country. The downtown urban core is a combination of skyscrapers and renovated historic buildings.

In 1988, Nashville was divided into 14 subareas or major communities for planning purposes (Figure 2-2). The physical features and land use of each subarea are summarized on the following pages.

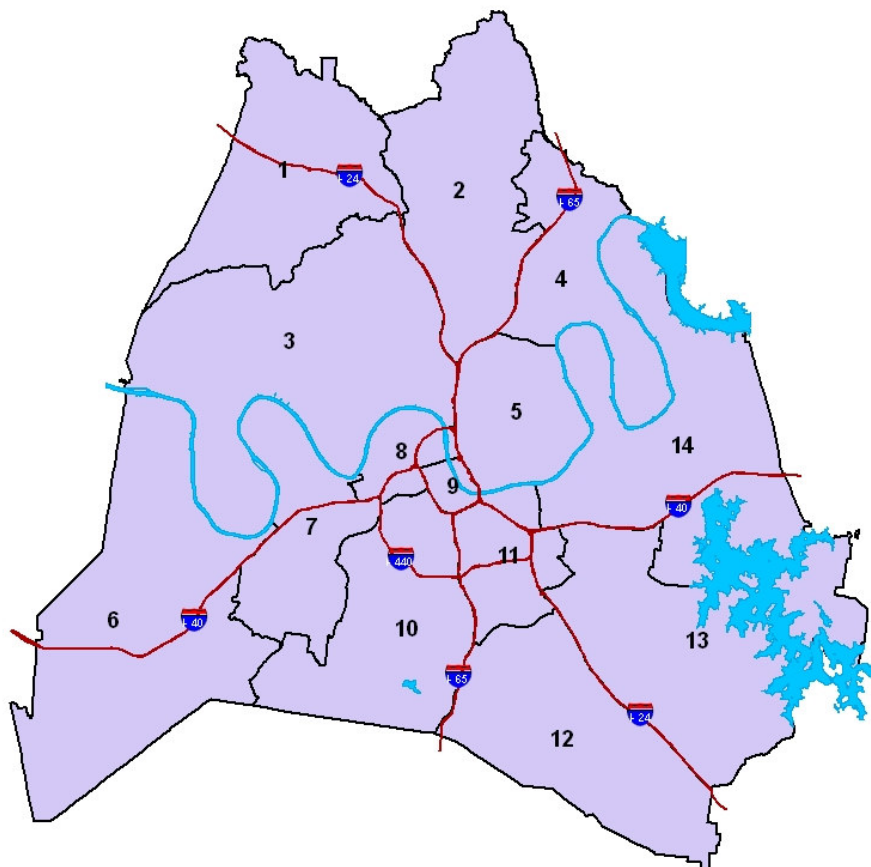


Figure 2-2. Subarea Location Map



### ***Subarea 1 – Joelton***

Joelton is located in the most northwestern part of Davidson County. It is bound to the west by the Cheatham County line; to the north by the Robertson County line; to the east by Ivy Point Road and Crocker Springs Road; and to the south by Little Marrowbone Drive and Old Hickory Boulevard. The Joelton Community is almost evenly divided into two distinct topographic areas. In a crescent that curves from the southwestern section to the northeastern section of the area, steep slopes (greater than 20 percent) and narrow ridges and valleys are the predominant features. In the northwestern and central area, level to rolling land is the predominant feature with occasional steep-sided ravines with streams at the bottom. Significant water bodies in this area include Marrowbone Lake, Little Marrowbone Creek, Whites Creek, and Eatons Creek.

Joelton's historically rural development pattern is evident in its land use. Fifty-six percent of the subarea's land use is residential, 40 percent is vacant, and only 0.02 percent is for commercial purposes.

### ***Subarea 2 – Parkwood-Union Hill***

This subarea is located in the most northeastern part of the county. It is bounded by the Robertson and Sumner County lines to the north, the Goodlettsville city limits and I-65 to the east, I-65 and I-24 to the south, and I-24, Lickton Pike, Crocker Springs Road, Union Hill Road, and Ivey Point Road to the west. Most of the subarea's terrain consists of heavily forested steep slopes and narrow ridges and valleys. Generally, land south of Old Hickory Boulevard is more level. Major streams in this area include Whites Creek, Ewing Creek, Mansker Creek, Little Creek, and Baker Branch Creek.

The area is predominantly rural and suburban residential with scattered commercial development along Dickerson Pike. There are mixed commercial concentrations at I-24/Old Hickory Boulevard and Briley Parkway/Brick Church Pike. Two emerging light industrial areas include Brick Church Pike/Brick Church Lane and Springfield Hwy/Lickton Pike. There are minimal to moderate growth expectations for both population and employment. New commercial concentration is planned at Briley Parkway/Dickerson Pike.

### ***Subarea 3 – Bordeaux-Whites Creek Community***

The Bordeaux-Whites Creek Community is located in northwestern Davidson County, stretching from the Cumberland River to Old Hickory Boulevard and I-24 to the Cheatham County line. The area is characterized by older suburban development and rural land. The north and west portions of the community are generally steeply sloped (slopes of 20 percent or greater) with a significant amount of Dellrose Soil scattered throughout. Dellrose soils are particularly noted for slippage when located on steep slopes. The areas of steep topography account for 50 percent of the land in the community. The southeast portion of the area is gently rolling or relatively level. Portions of Whites Creek, Ewing Creek, and Eatons Creek pass through this area.



Land use is predominately residential or vacant land. Only a small portion is for commercial use. Industrial uses are found near Briley Parkway and along the southern portions of I-24.

#### ***Subarea 4 – Madison***

This subarea is located in the northeastern section of the county. It is bounded in the north by the Sumner County line; in the west by the City of Goodlettsville; and in the east and south by Briley Parkway and the Cumberland River. The subarea's terrain is predominately level, with most areas having slopes less than 12 percent. Steeper sloping areas (slopes greater than 12 percent) can be found in the northern part of the subarea both in Goodlettsville and in the area north of Vietnam Veterans Boulevard, and in the southern part of the subarea at the I-65/Briley Parkway interchange.

Most of the subarea does not contain soils that are restrictive to urban development. Soils that are restrictive to development are found in the Cumberland River floodplain, the Dry Creek floodplain, and at the base of steep slopes near the I-65/Long Hollow Pike interchange. Major streams (other than the Cumberland River) include Mansker Creek, Dry Creek, Gibson Creek, and Love Branch.

Fifty-five percent of active land use is residential, and 28 percent is vacant or used for agricultural purposes.

#### ***Subarea 5 – East Nashville***

This subarea is located in the central portion of the county. It is bounded by Briley Parkway to the north; the Cumberland River to the east and south; and I-65 to the west. Most of the subarea's terrain is flat to gently rolling. The hilliest area is along the Ellington Parkway corridor in the northwestern quadrant of the subarea. Most other steep slopes are hillsides of valleys associated with tributaries to the Cumberland River in the southeastern section of the subarea. Other than the Cumberland River, the most significant waterways are East Fork Ewing Creek and Cooper Creek.

This is a predominantly developed subarea. Approximately 60 percent of the subarea is residential and 30 percent is devoted to nonresidential uses including commercial, industrial, and community facilities and services. The remaining 10 percent is undeveloped, most of which is in the northwest section. Commercial activities are focused in a linear pattern along Gallatin Pike and along Dickerson Pike.

#### ***Subarea 6 – Bellevue***

Located in the southwestern corner of Davidson County, Bellevue is a primarily rural and suburban residential community. It is bound to the west by the Cheatham County line; to the south by the Williamson County line; to the north and northeast by the Cumberland River; and to the east by I-40, Percy Werner Park, and CSX railroad. Its distance from downtown Nashville, coupled with the concentration of farmland and hilly terrain, gives the area an overall rural feel. Major commercial concentrations are at Highway 70 South and Old Hickory Boulevard and Highway 70 South and I-40, where the Bellevue Center Mall is

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located. Residential and commercial areas dominate the southern portion of the subarea, while the northern portion is generally rural.

In addition to the Cumberland River, water bodies in this area include the Harpeth River and Indian Creek. Colluvial soils are abundant in this area, located mostly in the southern portion along side the steeper slopes.

### ***Subarea 7 – West Nashville***

Subarea 7 is a predominately developed area and is located to the west and southwest of downtown Nashville. It is bound by the Cumberland River to the north, CSX railroad and the City of Belle Meade to the east, Percy Warner Park to the south, and I-40 to the west. Terrain in this subarea ranges from flat to moderately sloping, with some very steep slopes (20 percent and greater) found in the southwestern portion of the subarea. Approximately 71 percent of the land in this area has slopes with less than a 10 percent grade, 18 percent with slopes at 10-20 percent grade, and the remaining 11 percent with slopes at a grade of 20 percent and greater. In addition to the Cumberland River, which forms the northern boundary of the subarea, several major streams wind through this area including Richland Creek, Jocelyn Hollow Branch, and Vaughn's Gap Branch. The particularly unstable Dellrose soils are located within this subarea.

Fifty-five percent of the area's land use is residential, 22 percent is vacant, and 23 percent is for commercial, industrial, or community purposes.

### ***Subarea 8 – North Nashville***

This subarea is located to the north and northwest of downtown Nashville. The area is bound by the Cumberland River to the north, east, and west. The southern border is a combination of the CSX railroad, I-40, Charlotte Ave, and Jefferson Street.

### ***Subarea 9 – Downtown Nashville***

Located in the heart of Davidson County is subarea 9, Downtown Nashville. Bounding the area to the east is I-65/I-24; to the south and west is I-40; and to the north is Jefferson Street. This subarea is split by the Cumberland River, with approximately 25 percent of the area on the east bank. Topography on the east bank is low and flat, while topography of the west bank is elevated with bluffs rising above the normal flow elevation of the river.

The subarea is dominated by three commanding physical features: Capitol Hill to the north; Rutledge Hill to the south; and the Cumberland River. Capitol Hill rises to an elevation of 555 feet and is given shape by sideslopes over 25 percent. Rutledge Hill reaches 536 feet. A distance of 1.4 miles separates the crests of the two hills.

This subarea is dominated by Nashville's Central Business District (CBD) and its supported uses. The CBD is characterized by an urban core of intensive office structures, which are a combination of skyscrapers and renovated historic buildings, with parking, printing, office





supplies, and apartments on the outskirts. Bicentennial Mall and Riverside Park are the only significant areas of greenspace.

### ***Subarea 10 – Greenhills-Midtown***

Located in the southern portion of the county, this area is bound by I-40 to the north, I-65 to the east, the Williamson County line to the south, and Percy Werner Park, Belle Meade city limits, Charlotte Pike, and CSX railroad to the west. This area is mostly flat to rolling terrain except for an east-west band of hills across the southern portion, some of which are steep. The area is highly urbanized to the north, but becomes suburban and, finally, almost rural in the hilly area in the south. Major water bodies include Radnor Lake, Richland Creek, Browns Creek, Otter Creek and Sugartree Creek.

Approximately three-fifths of the land area is residential with single family homes and apartments. Nearly 15 percent of the subarea is dedicated to park use. Several major hospitals and universities are located in this subarea including Baptist, Columbia Centennial, Columbia Southern Hills, St. Thomas and Vanderbilt University Hospitals; and Vanderbilt, Belmont, and David Lipscomb Universities.

### ***Subareas 11 and 12 – South Nashville***

Subarea 11 is located in the south-central area of the county and is bounded by the Cumberland River to the north; I-24 to the east; the CSX railroad to the south; and I-65 to the west. The topography in the area is generally flat with the highest elevations occurring around Fort Negley. Major bodies of water include the Cumberland River, Mill Creek, and Brown's Creek. Predominant land uses are residential and industrial.

Subarea 12 is bounded by I-24 to the east; the Rutherford County line to the southeast; the Williamson County line to the south; Franklin Pike and I-65 to the west; and the CSX railroad and a small segment of Sevenmile Creek to the north. Although most of the land is gently rolling or relatively level, steep slopes are scattered throughout the subarea. Significant water bodies in this subarea include Mill Creek and Sevenmile Creek. There are known sinkholes in the areas north and south of Harding Place and around Mill Creek. Wetlands are found throughout subarea 12, but are generally found within the floodplains of Mill Creek and Sevenmile Creek.

The predominant active use of land is residential use, which accounts for 64 percent of the subarea, while 25 percent of the subarea is vacant. Commercial and industrial uses occupy only 3.2 percent of the total subarea.

### ***Subarea 13 – Antioch – Priest Lake***

Subarea 13 located in southeast Davidson County and encompasses Nashville International Airport and J. Percy Priest Lake. The subarea is bounded to the southwest and west by Interstate 24 and Briley Parkway; to the north by Interstate 40; to the east by J. Percy Priest Lake; and to the southeast by the Davidson County line. The subarea includes older suburban subdivisions, new development, large employers and rural lands.

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### ***Subarea 14 – Donelson – Hermitage***

This subarea is located on the eastern side of Davidson County and is bounded by the Cumberland River to the west and north; Sumner and Wilson Counties to the northeast and east; Percy Priest Lake, Couchville Pike, Nashville International Airport, and I-40 to the south; and Spence Lane and the CSX railroad to the west. Most of the subarea has gently rolling terrain with steeply sloping land limited mostly to corridors along waterways. Major water bodies in this subarea include the Cumberland River, J. Percy Priest Lake, Stone's River, Stoner's Creek, and Mill Creek.

Almost half of the land currently developed is residential. Commercial concentrations are in the Donelson and Hermitage areas. There is a major mixed entertainment/commercial concentration in Pennington Bend that includes the Opryland Hotel, the Grand Ole Opry House, and Opry Mills Shopping Mall. An estimated one-fourth of the subarea's land is currently vacant, a significant portion of which is affected by flooding.

## **POPULATION**

Since its settlement in 1779, Nashville has grown to become Tennessee's largest city. Together, Nashville and Davidson County contain a population of 569,891, according to the 2000 U.S. Census.

**Table 2-2. Population Growth**

<b>Population Growth 1960 to 2000</b>		
<b>Year</b>	<b>Population</b>	<b>% Change</b>
1960	399,743	24.2
1970	447,877	12.0
1980	477,811	6.7
1990	510,784	6.9
2000	569,891	11.6

(Source: Nashville Area Chamber of Commerce)

Because a large portion of the population of the area surrounding Nashville is dependent on Nashville as a place to work or live, Nashville is the center of the Nashville Metropolitan Statistical Area (MSA). The Nashville MSA comprises eight counties including Davidson, Williamson, Dickson, Cheatham, Robertson, Sumner, Wilson, and Rutherford. The MSA population is over one million persons.



## ECONOMIC DEVELOPMENT

Nashville is the capital of Tennessee and a vital transportation, business and tourism center for North America. In addition to the eight counties included in the Nashville MSA, the Nashville Economic Market contains two additional counties (Maury and Montgomery). The Region's economy is diverse and mirrors the national economy. The area benefits from low unemployment, consistent job growth, substantial outside investment and expansion, and a growing labor force.

Nashville is known as "Music City USA" because of its vast musical heritage and ever-growing musical industry. It serves as the headquarters for more than a dozen major record labels and over 70 smaller labels, approximately 200 recording studios, 130 music publishing companies, 200 booking agents, 10 record manufacturers, and 33 record promotion companies. Although music is the City's most popular industry, it's not the largest. Nashville is a leader in the areas of publishing and printing, finance and insurance, healthcare, higher education and tourism. All of these industries have helped to build and guarantee a strong local economy.

Major companies with headquarters or plants in metropolitan Nashville include auto manufacturers Saturn and Nissan; computer manufacturer Dell; national health care providers Columbia Health System and HCA; restaurants Cracker Barrel and Shoney's; Gaylord Entertainment, owner of Opryland USA and The Nashville Network (TNN). Other key enterprises include Aladdin, a leader in the manufacturing of vacuum bottles and lunch kits; Thomas Nelson, Inc., the world's largest bible publisher; Baptist Sunday School Board and United Methodist Publishing, two of the largest religious publishing houses in the world; and Bridgestone Firestone, Inc, tire manufacturer.

Boasting a multitude of world-class companies, Nashville has become a destination for a young, progressive generation of families. Over the past decade, the Nashville has seen tremendous increases in several areas including: population growth in the region from 53<sup>rd</sup> in the United States to 38<sup>th</sup>; and income growth in the region from 138<sup>th</sup> in the United States to 49<sup>th</sup>. The median household income of the region has improved from 5 percent below the US average to 7 percent above it.

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# Multi-Hazard Mitigation Plan

## 3.0 Planning Process

The Mayor's Office of Emergency Management (OEM) and Metro Water Services (MWS), contracted with AMEC Earth & Environmental (AMEC) to facilitate and develop this Multi-Hazard Mitigation Plan. AMEC's role was to:

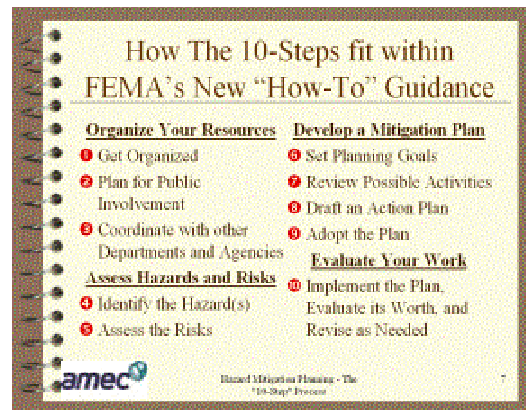
- Establish a planning organization for Nashville and Davidson County and all of the participants;
- Meet all of the DMA requirements as established by federal regulations, following FEMA's planning guidance;
- Facilitate the entire planning process;
- Coordinate the DMA planning process with the Community Rating System planning process;
- Identify the data requirements that the participating counties, communities, and other FEMA "eligible applicants" could provide, and conduct the research and documentation necessary to augment that data;
- Develop and facilitate the Public Input process;
- Produce the Draft and Final Plan documents; and
- Guarantee acceptance of the final Plan by FEMA Region IV.

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Funding for the planning assistance contract was provided to Metro by FEMA through the Tennessee State Emergency Management Agency (TEMA). The required local match was provided as an "in-kind" or "soft" match, through the many hours spent on this effort by each of the planning team participants, as well as through the use of their facilities for meetings and actual cash disbursements for copying and public notices, where necessary.

AMEC established the process for this planning effort utilizing the DMA planning requirements and FEMA's associated guidance. This guidance is structured around a 4-phase process. AMEC also integrated an older, more detailed 10-step planning process that was still required at the time this effort was initiated for other FEMA mitigation plans, such as for FEMA's Community Rating System (CRS) and Flood Mitigation Assistance (FMA) programs. Thus, AMEC formulated a single planning process that melds these two sets of planning requirements together and meets the requirements of six major programs: DMA, CRS, FMA, Hazard Mitigation Grant Program (HMGP), FEMA's Pre- Disaster Mitigation Program (PDM), and new flood control projects authorized by the U.S. Army Corps of Engineers (USACE). The graphics below show how the old 10-step process fits within the new 4-phase process.





**Figure 3-1. DMA and CRS Similar Planning Steps**

The following table also serves as a means of cross-referencing the two sets of planning requirements.

**Table 3-1. DMA and CRS Planning Cross Reference**

Disaster Mitigation Act Planning Regulations (44 CFR 201.6)	CRS Planning Steps
<b>Planning process</b>	
201.6(c)(1)	1. Organize
201.6(b)(1)	2. Involve the public
201.6(b)(2) & (3)	3. Coordinate
<b>Risk assessment</b>	
201.6(c)(2)(i)	4. Assess the Hazard
201.6(c)(2)(ii) & (iii)	5. Assess the Problem
<b>Mitigation strategy</b>	
201.6(c)(3)(i)	6. Set Planning Goals
201.6(c)(3)(ii)	7. Review Possible Activities
201.6(c)(3)(iii)	8. Draft an Action Plan
<b>Plan maintenance</b>	
201.6(c)(5)	9. Adopt the Plan
201.6(c)(4)	10. Implement, Evaluate, Revise



## LOCAL GOVERNMENT / COMMUNITY PARTICIPATION

The DMA planning regulations and guidance stress that each local government seeking the required FEMA approval of their mitigation plan must:

- Participate in the process;
- Detail areas within the Planning Area where the risk differs from that facing the entire area;
- Identify specific projects to be eligible for funding; and
- Have the Governing Board formally adopt the plan.

For Nashville and Davidson County, “participation” means the local government representatives will:

- Attend the Community Planning Team meetings;
- Provide available data that is requested by the Planning Team;
- Review and provide/coordinate comments on the Draft plans;
- Advertise, coordinate and participate in the Public Input process; and
- Coordinate the formal adoption of the plan by the Metro Council.

## THE PLANNING PROCESS

### Step 1: Organize

With the commitment to participate by the Mayor’s Office of Emergency Management (OEM) and Metro Water Services (MWS), AMEC next established a framework and organization for the development of the Multi-Hazard Mitigation Plan. This Plan was developed by a planning team led by OEM and comprised of key Metro stakeholder representatives. This team is called the Community Planning Team, or CPT. The CPT met six times over a seven-month period. Representatives from several Metro departments attended each meeting including the Metro Planning Department; Metro Codes Administration; Metro Public Works; and the Police, and Fire Departments. Also in regular attendance were representatives from Nashville Electric Service (NES) and the National Weather Service. The list of CPT members is included in Appendix A. Attendees and meeting minutes for each of the CPT meetings are also included in Appendix A. The CPT will stay in existence for the purpose of implementing and updating this Plan. The six CPT meeting dates and topics were as follows:

1. January 9<sup>th</sup> – Kickoff Meeting;
2. April 22<sup>nd</sup> – Hazard Identification;
3. May 27<sup>th</sup> – Risk Assessment and Goal Setting;
4. June 24<sup>th</sup> – Review Possible Mitigation Activities;
5. July 29<sup>th</sup> – Review and Prioritization of Possible Mitigation Activities; and
6. September 16<sup>th</sup> – Final Review of Draft Plan.

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**Step 2: Involve the Public**

In addition to the CPT, a public input committee, the Stormwater Regulation Review Committee (SWR2C), was also utilized. The SWR2C is comprised of representatives from Metro Council, the State Health Department, the U.S. Army Corp of Engineers, the U.S. Department of Agriculture, neighborhood associations, and the rural community and local environmentalists, engineers, builders, and developers. Multi-Hazard mitigation and the planning process were incorporated into three SWR2C meetings. News articles and press release information were posted on the Community website at [www.nashville.gov](http://www.nashville.gov). Public review of the Multi-Hazard Mitigation Plan took place through a formal Public Meeting. Stakeholder and public comments were reflected in the preparation of the Plan, including those sections addressing mitigation goals and action strategies. Public meetings were held on the following dates:

1. June 24<sup>th</sup> – SWR2C - Kickoff Meeting and Hazard Identification;
2. August 19<sup>th</sup> – SWR2C - Review of Draft Plan; and
3. September 15<sup>th</sup> – Public Meeting; Final Review of Draft Plan.

**Step 3: Coordinate with other Departments and Agencies**

Early on in the planning process, the CPT determined that data collection, mitigation and action strategy development, and plan approval would be greatly enhanced by inviting other state and federal agencies to participate in the planning process. Based on their involvement in hazard mitigation planning, representatives from the following key agencies were offered inclusion as members of the CPT:

- Tennessee Emergency Management Agency;
- FEMA Region IV;
- U.S.Army Corps of Engineers, Nashville District;
- Natural Resource Conservation Service, State Conservationist;
- National Weather Service;
- National Flood Insurance Program (NFIP) State Coordinator; and
- Tennessee Natural Resource Conservation Service

In addition, technical data, reports, and studies were obtained from these agencies either through web-based resources or directly from the agencies.

**Relationship to Other Community Planning Efforts and Hazard Mitigation Activities**

Coordination with other community planning efforts is also paramount to the success of this Plan. Hazard mitigation planning involves identifying existing community policies, tools and actions that will reduce a community's risk and vulnerability from natural hazards. Metro utilizes a variety of comprehensive planning mechanisms to guide and control community development, such as land use and master plans, emergency response and mitigation plans, and municipal ordinances and building codes. Integrating existing planning efforts and mitigation policies and action strategies into this Hazard Mitigation Plan establishes a credible and consistent plan that ties into and supports other community programs. This Plan, therefore, links the specific natural hazards that present a risk in the community with the existing mitigation elements found in the various community plans. The development of this Plan drew upon information included in the following plans, studies, reports, and initiatives:





- Mayor's Office of Emergency Management, Comprehensive Emergency Management Plan (CEMP), March 1999;
- Mayor's Office of Emergency Management, Local Hazard Mitigation Plan, February 2001;
- MWS, Stormwater Management Studies, various watersheds, 1988 – 2001;
- MWS, Stormwater Program and Organizational Study, January 2002;
- MWS, Community Rating System Action Plan, July 2003;
- MWS, Major Capital Improvement Program Planning and Prioritization, July 2003;
- MWS, Floodplain Management Plan for Repetitive Loss Areas, October 2002;
- Metro Planning: Concept 2010 – A General Plan for Nashville and Davidson County, February 1992;
- Metro Planning: Subarea Plans, multiple plans, 1995-2004;
- NES, Emergency Load Curtailment Plan, Winter 2003-2004;
- NES, Emergency System Restoration Plan; and
- NES, Vegetation Management Section, January 2003.

Additional references are included in Appendix D.

#### **Step 4: Assess the Hazard**

The CPT conducted a Hazard Identification study to determine what hazards threaten the planning area. Research focused on previous occurrences of natural hazards, those that might occur in the future, and the likelihood of their occurrence or recurrence. The hazards identified and investigated in the Metro area include:

- Dam and Levee Failure;
- Earthquake / Liquefaction;
- Flood;
- Geological Hazards – Landslides and Sinkholes;
- Infestations;
- Manmade Hazards; and
- Severe Weather, which includes:
  - Drought / Wildfires;
  - Extreme Temperatures;
  - Thunderstorms / High Winds;
  - Tornadoes; and
  - Winter Storms.

#### **Step 5: Assess the Problem**

Once the hazard identification step was complete, the CPT conducted both vulnerability and capability assessments to describe the impact that each identified hazard would have upon Metropolitan Nashville-Davidson County and to determine the current ability of Metropolitan Nashville and Davidson County to mitigate the hazards through existing policies, regulations, programs, and procedures. The analyses identified areas where improvements could or should be made.



**Step 6: Set Planning Goals**

Planning goals were established to incorporate improvement areas identified in Step 5 into the Mitigation Plan. The CPT set goals, formulated as public policy statements, that:

- Represent basic desires of the community;
- Encompass all aspects of the community, public and private;
- Are nonspecific, in that they refer to the quality (not the quantity) of the outcome;
- Are future-oriented, in that they are achievable in the future; and
- Are time-independent, in that they are not scheduled events.

Additionally, goals from other community programs and priorities were identified and discussed. This Multi-Objective Management (MOM) assisted the CPT in striving for efficiency by combining projects/needs from various community programs and plans that are similar in nature or location. Combining projects/needs through MOM effectively results in access to multiple sources of funding to solve problems that can be “packaged” and broadens the supporting constituency base by striving towards outcomes desired by multiple stakeholder groups.

**Step 7: Review Possible Mitigation Activities**

Following the goal setting meeting, the CPT undertook a brainstorming session to generate a set of viable alternatives that would support the selected goals. The CPT focused on the following categories of mitigation measures:

- Prevention;
- Property Protection;
- Structural Projects;
- Natural Resource Protection;
- Emergency Services; and
- Public Information.

A facilitated discussion examined and analyzed potential alternatives. Similar to the goal-setting activity, the CPT included all previously recommended mitigation actions from existing Metro mitigation plans in its review. After old and new mitigation actions had been identified, the CPT members used a FEMA recommended decision-making process to prioritize mitigation measures.

**Step 8: Draft an Action Plan**

The prioritized mitigation measures were further developed into an action plan that identifies the following for each measure:

- Source (developed by the CPT or originating from an existing plan);
- Mitigation category (prevention, property protection, etc.);
- Responsible office;
- Priority (high, medium, or low);
- Cost estimate;
- Benefit to the community;



- Potential funding sources; and
- Schedule for completion.

### **Step 9: Adopt the Plan**

The Metropolitan Nashville and Davidson County Council will adopt the Multi-Hazard Mitigation Plan by passing a resolution.

### **Step 10: Implement the Plan, Evaluate its Worth, Revise as Needed**

Step 10 is critical to the overall success of Hazard Mitigation Planning. Upon adoption, the Mitigation Plan faces the truest test of its worth, implementation. Many worthwhile and high priority mitigation actions have been recommended. The CPT must decide which action to undertake based upon priority and available funding.

In addition, the Mitigation Plan requires maintenance. There will be an ongoing effort to monitor and evaluate the implementation of the plan, and to update the plan as progress, roadblocks, or changing circumstances are recognized.

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